

AMENDMENT UNDER 37 C.F.R. § 1.111  
U.S. Application No.: 10/554,359  
Attorney Docket No.: Q91021

**AMENDMENTS TO THE SPECIFICATION**

**Please replace the paragraph bridging pages 3-4 with the following amended paragraph:**

In the air heater system for a vehicle according to the first invention, the semiconductor switch connected to the electrothermal heating element in series is used to control the energization to this electrothermal heating element. Therefore, the air heater system of the invention can provide a simplified structure, improved reliability and durability, and a low cost as compared with a conventional air heater system using a relay switch to perform the ON-OFF switching of an air heater. Further, the air heater system of the invention using the semiconductor switch can easily perform energization control (e.g., ON-OFF control, PWM control, and so on) of the air heater. For example, the semiconductor switch connected to the electrothermal heating element in series is turned ON/OFF by a control device (e.g., ECU), enabling easy control of energization to the electrothermal heating element. ~~The use~~ of the semiconductor switch makes it possible to perform ON-OFF switching of energization to the electrothermal heating element at a faster rate as compared with the relay switch. Accordingly, fine or accurate energization control of the electrothermal heating element can be achieved.

**Please replace the second full paragraph at page 7, lines 14-28, with the following amended paragraph:**

For environmental protection, there has recently been proposed a technique for returning unburned gas that flows out of an internal combustion engine to an air intake side, burning the gas there, in order to prevent discharge of the unburned gas out of a vehicle. Further, there has also been proposed another technique, Exhaust Gas Recirculation (EGR), for returning part of exhaust air having increased in temperature to an air-intake side to enhance thermal efficiency of an internal combustion engine. However, the returning of unburned gas or exhaust air to the air-intake side may cause a problem that contaminants in the unburned gas or exhaust gas adhere to the electrothermal heating element of the air heater, decreasing the resistance value of the

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electrothermal heating element, further leading to a short circuit in the electrothermal heating element. On the other hand, the above series circuit may be broken if excessive electric power load is applied to the series circuit provided between the electrothermal heating element and the semiconductor switch.

**Please replace the paragraph bridging pages 40-41 with the following amended paragraph:**

The flow advances to step SE in which energization for afterheating is performed by use of the calculated duty ratio. To be concrete, the ON-OFF switching of the semiconductor switch 110 are repeated at a time rate determined based on the duty ratio. The flow then advances to step SF in which the afterheating counter T2 is accumulated. Specifically, as with the preheating counter T1, the afterheating counter T2 is incremented every time the flow passes through the step SESF. In following step SG, it is determined whether or not the afterheating counter T2 has reached the number of times Ta the afterheating is set, corresponding to a termination time of the afterheating. In the present embodiment, the number of afterheating setting times Ta is set at 12000 and hence the afterheating termination time is set at 600 seconds.